Before the
FEDERAL COMMUNICATIONS COMMISSION FCC 94-60
Washington, D.C. 20554 FCC MAIL SECTION

In the Matter of	)	MAR 31 3 31 PM '94
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Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies	) ET Docket No. 92-9	
	)	DISPATCHED BY
	) RM-7981	
	) RM-8004	

MEMORANDUM OPINION AND ORDER
(Proceeding Terminated)

Adopted: March 8, 1994 Released: March 31, 1994

By the Commission: Commissioners Quello and Barrett issuing separate statements.

INTRODUCTION

1. By this action, the Commission refines and clarifies the rules and policies adopted to make spectrum available for emerging telecommunications technologies. At previous stages of this proceeding, we took the following actions: 1) allocated spectrum for emerging technologies at 2 GHz that could be used by new services, such as the personal communications services (PCS);[1] 2) reallocated five fixed microwave bands and adopted associated rules to accommodate existing 2 GHz fixed microwave users;[2] and 3) adopted provisions intended to provide reasonable access to 2 GHz spectrum by new services.[3] In this Memorandum Opinion and Order, we respond to twelve petitions for reconsideration or clarification that address a variety of issues related to these actions. These modifications and clarifications conclude our actions to allocate spectrum that can be used for emerging technologies. Such new technologies are expected to contribute to the development of the national information infrastructure and to serve the need for ubiquitous wireless access to voice and data communications. These developments will

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[1] First Report and Order and Third Notice of Proposed Rule Making, ET Docket No. 92-9, 7 FCC Rcd 6886 (1992).

[2] Second Report and Order, ET Docket No. 92-9, 8 FCC Rcd 6495 (1993).

[3] Third Report and Order and Memorandum Opinion and Order, ET Docket No. 92-9, 8 FCC Rcd 6589 (1993).

provide new services to the public, create new jobs and foster effective competition in the global market.

BACKGROUND

2. In this proceeding the Commission allocated 220 MHz in the 1850-1990, 2110-2150, and 2160-2200 MHz bands (2 GHz bands) for emerging technologies and adopted a regulatory framework that will allow this spectrum to be shared by new services and the existing fixed microwave services that currently use these frequencies. In those instances where both of these services cannot share this spectrum, existing 2 GHz facilities can be relocated to other spectrum. The regulatory framework is intended to provide licensees of services using emerging technologies with access to 2 GHz frequencies in a reasonable timeframe and, at the same time, prevent disruption to existing 2 GHz operations and minimize the economic impact on the existing licensees.

3. In the First Report and Order and Third Notice of Proposed Rule Making (First R&O), the Commission adopted the emerging technology allocation. It also set forth a regulatory framework that encourages incumbent 2 GHz licensees to negotiate voluntary relocation agreements with an emerging technology service licensee or unlicensed device manufacturer when frequencies used by an existing 2 GHz facility are needed to implement the emerging technology. Should voluntary relocation negotiations fail, the emerging technology service provider or unlicensed device manufacturer or representative could request involuntary relocation of the existing facility. In such a case, the emerging technology service provider must:

1) guarantee payment of all costs of relocating to a comparable facility, including all engineering, equipment, and site costs and FCC fees, as well as any reasonable additional costs;
2) complete all activities necessary for placing the new facilities into operation, including engineering and frequency coordination; and
3) build and test the new microwave (or alternative) system.

4. In the Second Report and Order (Second R&O), the Commission reallocated five bands: 3.7-4.2 GHz (4 GHz); 5.925-6.425 GHz (lower 6 GHz); 6.525-6.875 GHz (upper 6 GHz); 10.565-10.615/10.630-10.680 GHz (10 GHz); and 10.7-11.7 GHz (11 GHz) to the private operational and common carrier fixed microwave services on a co-primary basis and prescribed channelization plans and technical rules to govern their use.[4] The existing 20

[4] Note 2, supra.

MHz channel plan was maintained at 4 GHz and a 1.25 MHz-based plan was adopted at 6, 10, and 11 GHz. The Commission found that these channeling plans would be equitable to all manufacturers, would efficiently satisfy the spectrum requirements of low capacity 2 GHz licensees by permitting lower-cost equipment to be used, and would reduce the potential for interference to satellite operations at 4 GHz. The Second R&O also adopted Part 21 coordination procedures and Part 94 interference standards in all bands.

5. In the Third Report and Order (Third R&O), the Commission completed the details of a transition plan to enable new service providers to share with or relocate incumbent facilities to other spectrum.[5] It provided separate relocation policies for frequencies to be used by licensed emerging technology services and for those to be used for unlicensed devices. For licensed services, a fixed two-year period commencing with the Commission's acceptance of applications for emerging technologies was adopted. During this period negotiation over the terms of relocation is encouraged but not required. After this fixed period expires, an emerging technology licensee may initiate a one-year period for mandatory negotiations with the fixed microwave licensee. For unlicensed devices, a single one-year mandatory negotiation period was adopted that will commence with the initiation of negotiations by manufacturers of unlicensed devices or their representatives. For both licensed services and unlicensed devices, after expiration of the mandatory negotiation period, involuntary relocation of the fixed microwave facilities may be sought if agreement is not reached by the parties. In all instances of involuntary relocation, the emerging technology provider will be required to pay all costs associated with the relocation.

6. In the Third R&O we also clarified the types of 2 GHz public safety facilities that are exempt from mandatory relocation. Finally, we authorized the grant of tax certificates to incumbent fixed microwave licensees for any sale or exchange of property in connection with voluntary agreements for relocation concluded during the fixed two-year voluntary negotiation period.

7. In this Memorandum Opinion and Order, we address three petitions for reconsideration and clarification of the Commission's Second R&O[6] and nine petitions for reconsideration

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[5] Note 3, supra.

[6] Petition for Clarification or Partial Reconsideration filed by Comsearch on October 22, 1993; Petition for Partial Reconsideration filed by Digital Microwave Corporation (DMC) on September 13, 1993; and Petition for Partial Reconsideration

and clarification of the Commission's Third R&O.[7] With regard to the Second R&O, the petitioners address the following issues:

- the deadline of July 15, 1994, by which manufacture must cease manufacture or importation of microwave equipment that does not meet the new digital efficiency standards in bands above 3 GHz;
- use of alternate channels or frequency pairings;
- 4 GHz band channeling plan;
- use of the 6425-6525 MHz (6.4 GHz) Local Television Transmission Service (LTTS) band for general common carrier operations;
- technical issues that include maximum power limits, antennas standards, and automatic transmit power control (ATPC); and
- use of the 1710-1850 MHz government band for relocation of non-government fixed microwave facilities.[8]

8. The petitioners request that the Commission clarify or reconsider the following issues of the Third R&O:

- redefining the public safety fixed microwave facilities eligible for exemption from mandatory relocation;

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filed by Western Tele-Communications, Inc. (WTCI) on October 21, 1993.

[7] Petition for Reconsideration filed by Apple Computer (Apple) on September 13, 1993; Petition for Reconsideration and Partial Clarification filed by Association of American Railroads (AAR) on October 4, 1993; Petition for Clarification and/or Reconsideration filed by the American Association of State Highway and Transportation Officials Special Committee (AASHTO) on Communications on September 17, 1993; Petition for Reconsideration filed by AMSC Subsidiary Corporation (AMSC) on October 4, 1993; Petition for Partial Reconsideration filed by Forestry-Conservation Communications Association (FCCA) on October 4, 1993; Petition for Clarification or Reconsideration filed by Public Safety Communications Council (PSCC) on September 29, 1993; Petition for Partial Reconsideration filed by Public Safety Microwave Committee (PSMC) on October 4, 1993; Petition for Clarification and/or Reconsideration filed by Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) on October 4, 1993; Petition for Clarification and/or Partial Reconsideration filed by Utilities Telecommunications Council (UTC) on October 4, 1993.

[8] Reaccommodation of incumbents in the 1710-1850 MHz government band is addressed by petitions to both the Second R&O and the Third R&O. This issue will be addressed below in the DISCUSSION section under the Third R&O.

- authorizing tax certificates only during the two-year voluntary negotiation period for licensed emerging technology services;
- permitting reaccommodation of incumbents within the 2 GHz bands;
- specifying that acceptance of applications for emerging technology services "triggers" the two-year voluntary negotiation period;
- using the government band adjacent to the 2 GHz band for relocating fixed microwave licensees; and
- applying the relocation rules to the 1970-1990 and 2160-2180 MHz bands.[9]

Finally, on our own motion, we reconsider whether public safety fixed microwave facilities should continue to be exempt from mandatory relocation if their spectrum is needed by an emerging technology provider.

DISCUSSION

Second Report and Order Issues

9. Equipment Manufacturing Deadline. In the Second R&O, to ensure efficient use, the Commission adopted minimum digital data rates for each channel bandwidth of the higher fixed microwave bands made available for relocation of incumbents. The Commission adopted a 3.5-year transition period ending June 1, 1997, after which all new equipment for these bands must meet the specified data rates. Further, to minimize the use of equipment that does not meet the new efficiency standards, the Commission prohibited the manufacture or importation of such equipment after July 15, 1994.[10]

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[9] UTAM in its reply comments at 6 requests that the Commission clarify that when unlicensed PCS interests pay to relocate a microwave licensee's facilities that operate in both the unlicensed band and another band, the emerging technology entities seeking to commence operations on the frequency cleared by the unlicensed PCS interests are expected to reimburse the unlicensed PCS interests a proportionate share of the relocation cost. This request responds to the PCS allocation within the emerging technology bands. This subject is within the scope of the PCS proceeding not this emerging technology proceeding. See Second Report and Order, GEN Docket No. 90-314, 8 FCC Rcd 7700 (1993).

[10] This deadline will not apply to equipment manufactured for export.

10. In its petition for reconsideration, Digital Microwave Corporation (DMC) requests that the Commission eliminate the deadline of July 15, 1994, for the prohibition of the manufacture and importation of equipment that does not meet the new efficiency standards.[11] DMC argues that this deadline was not addressed in this proceeding prior to the Second R&O and was not envisioned by the interested parties as part of the 3.5-year transition period that was agreed to by the manufacturers after difficult and lengthy deliberation. DMC claims that such a deadline will create an economic hardship for DMC because it recently introduced an entirely new product line designed to meet the requirements of the old rules. It states that considerable costs were involved with developing and marketing this new equipment and that it now faces significant job reductions and financial losses despite having acted in good faith in designing equipment that complies with existing FCC rules.

11. Both the Fixed Point-to-Point Communication Section of the Telecommunications Industry Association (TIA) and Harris Corporation - Farinon Division (Harris) support DMC's request that the manufacture and importation deadline of July 15, 1994, be eliminated.[12] Harris argues that this requirement effectively reduces the transition period from 3.5-years to ten months. It states that companies generally strive to keep inventories to a "zero" level in an effort to reduce costs, and therefore, that they effectively will have to halt sales of affected equipment on July 15, 1994. Harris asserts that manufacturers make substantial investments in R&D and establishment of production lines for new products in advance of actual sales and that the 3.5-year transition period is essential to recoup these investments.

12. Alcatel Networks Systems, Inc. (ANS) opposes DMC's request.[13] It argues that the Commission's timetable is fair, does not burden manufacturers, and that implementation of the July 15, 1994 cut-off is necessary to ensure that inefficient radios do not proliferate as available spectrum decreases. It claims that the deadline provides manufacturers more than adequate notice before production must stop. ANS claims that this deadline corresponds to the standard industry production cycle. In reply comments, Harris counters ANS's claims that there is not any typical product life cycle for the microwave

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[11] DMC petition at 2, note 6 supra.

[12] TIA at 1 and Harris at 2.

[13] ANS at 3.

industry and again argues that the July 15, 1994 cut-off date will harm microwave service users and manufacturers.[14]

13. The Commission adopted the more stringent data rate requirements and associated transition periods to promote efficient use of the bands above 3 GHz. These requirements ensure that there will be adequate spectrum in those bands to accommodate the incumbent fixed microwave users required to move from the 2 GHz bands and that adequate spectrum is available for fixed microwave growth.

14. We also were concerned, however, that manufacturers of equipment and users of these bands not be unduly burdened by our more efficient data rate requirements for new equipment. Our intent was to allow manufacturers to recoup some of their investment in the implementation of recent equipment that complies with our former rules. The 3.5-year transition plan was an attempt to balance these conflicting interests. Further, we believed the one-year deadline for the manufacture and importation of equipment that does not meet the new efficiency standards would permit manufacturers to meet the near-term equipment needs of users and exhaust inventories prior to the June 1, 1997 deadline.

15. We now are persuaded by the comments that the July 15, 1994 deadline may unduly burden those manufacturers that recently have developed products that comply with the old rules, particularly if the manufacturer maintains a low or "zero" inventory. While we continue to believe that the 3.5-year transition period is reasonable, after reviewing the comments we conclude that the "cut-off" of July 15, 1994, for the manufacture and importation of equipment that does not meet the new standards should be extended two additional years, to July 15, 1996. We will continue to require that all equipment applied for, authorized, and placed in service after June 1, 1997, meet the efficiency requirements adopted in the Second R&O. We believe that changing the one-year deadline will provide manufacturers flexibility in discontinuing product lines that do not meet the new standard but will maintain our goal to transition to more spectrum-efficient equipment within a reasonable time period.

16. Frequency Pairing. In the Second R&O, the Commission reallocated five bands above 3 GHz to the private operational and common carrier fixed microwave services on a co-primary basis and adopted specific channelization plans for each.[15] The Commission

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[14] Harris reply at 3.

[15] The frequency bands reallocated are: 3.7-4.2 GHz (4 GHz); 5.925-6.425 GHz (lower 6 GHz); 6.525-6.875 GHz (upper 6 GHz); 10.565-10.615/10.630-10.680 GHz (10 GHz); and 10.7-11.7 GHz (11

also adopted changes in Parts 21 and 94 of its rules that allowed variances to the channeling plans.[16] Specifically, we stated that "Fixed systems licensed, in operation, or applied for in the 6525-6875 and 10,550-10,680 MHz bands prior to July 15, 1993 are permitted to use channel plans in effect prior to that date, including adding channels under those plans."[17]

17. Comsearch addresses two issues regarding the channeling plans and variances to the plans.[18] First, it requests that the Commission administer the frequency pairings as preferred, but not mandatory. It argues that there are situations, such as long haul circuits, that require multiple frequencies in which other pairings may be more spectrum efficient than those listed. Comsearch argues that, at the least, language similar to Section 94.15(d) should be added to Part 21.[19] Second, Comsearch requests clarification of the kind of changes to a system that will be authorized under the old plans, as provided for in Sections 21.701(l) and 94.65(q). Specifically, it asks if new paths which connect to an existing system will be allowed to use the old channeling plan used by the existing system and how the Commission will resolve situations in which interference from the surrounding environment requires use of the old channel plans.

18. Comsearch's request that the new frequency pairings not be mandatory was supported by ANS and Pacific Bell and Nevada Bell (PB/NB).[20] PB/NB argues that the existence of operations using the old frequency pairings in the same spectrum block will result in situations in which the new mandatory pairings cannot be used.

19. We believe that using the adopted frequency pairings will facilitate efficient use of the spectrum. However, we recognize that there will be locations, especially in congested areas, where new links cannot be coordinated if the new frequency

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GHz).

[16] See 47 C.F.R. §§ 21.701(l) and 94.65(q).

[17] Second Report and Order, supra note 2 at 62.

[18] Comsearch petition, supra note 6 at 4.

[19] The language from Section 94.15(d) to which Comsearch refers is as follows: "... Operations on other than the listed frequencies may be authorized where it is shown that the objectives or requirements of the interference criteria prescribed in Section 94.63 could not otherwise be met to resolve the interference problems." ...

[20] ANS at 8 and PB/NB at 1.

pairings are used but which could be coordinated if a frequency pair inconsistent with the new rules could be used. Therefore, we will consider on a case-by-case basis authorizing frequency pairings inconsistent with the rules upon a significant showing that the adopted frequency pairing plan would preclude the requested link. Additionally, we will include language in Section 21.701(m) similar to Section 94.15(d) to provide for these unique situations. We again encourage use of the new frequency plan wherever possible because its use generally will provide for the most efficient use of the spectrum. However, as already provided in our Rules, systems existing in the subject bands prior to July 15, 1993, may modify existing links and add new links under the old frequency pairing plans.[21]

20. 4 GHz Band Channeling Plan. In the Second R&O, the Commission concluded that the existing 20 MHz channeling plan for the 4 GHz band, 3.7-4.2 GHz, should not be modified. This decision was made to protect existing satellite operations that share this band with the point-to-point fixed microwave service. However, the Commission did authorize private fixed microwave licensees in addition to common carrier licensees to use the band under the current channeling plan. Unfortunately, the channeling plan published in the Appendix of the Second R&O inadvertently reflected a 280 MHz separation between transmit and receive frequencies, and this error understandably has caused some confusion on the part of the commenters.

21. In their respective petitions, Comsearch and Western Tele-Communications, Inc. (WTCI) request that the Commission clarify its intent with regard to the 4 GHz band.[22] They note the inconsistency between maintaining the 20 MHz channeling plan and adopting a 280 MHz separation between transmit and receive channels instead of the 20 MHz separation provided in the old interleaving channel plan. Comsearch further suggests that our common carrier rules be modified to include the 4 GHz band so that existing licensees would be grandfathered and not have to modify their operations. WTCI states that the channeling plan would require existing licensees to change their equipment, resulting in unnecessary cost, further coordination, and interference difficulties with respect to satellite operations and it requests that the old channeling plan be reinstated.

22. PB/NB support Comsearch and WCTI.[23] However, ANS opposes modification of the 4 GHz channelization plan. It argues

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[21] See 47 C.F.R. §§ 21.701(l), 94.65(q).

[22] WTCI petition at 7 and Comsearch petition at 5, note 6 supra.

[23] PB/NB at 2.

the channeling plan published in the Appendix of the Second R&O must be retained because it is consistent with new system requirements and with all other microwave frequency plans.[24]

23. In the Second R&O, we concluded that the existing 20 MHz channel plan should not be modified. We made this decision so that the currently licensed satellite operations that share this band would not be subject to the potential of interference from fixed microwave operations. However, the rules section of the Second R&O did not correspond with the text of the Second R&O. We will, therefore, correct the channeling plans to reflect the original 20 MHz separation between transmit and receive frequencies.[25]

24. With regard to ANS's support of the 280 MHz separation, we continue to believe that the 20 MHz separation should be maintained. The 280 MHz separation would increase the potential of interference from fixed microwave operations to the currently licensed satellite operations sharing this band. Further, it is not clear from ANS's comments why they believe that the 20 MHz separation is inconsistent with the other channeling plans. Therefore we are denying ANS's request.

25. 6425-6525 MHz Band. The 6425-6525 MHz band currently is allocated to the fixed service and is used for common carrier Local Television Transmission Service (LTTS), which is used to provide Electronic News Gathering (ENG), television remote pick-up, and non-broadcast video services. In its petition, WTCI requests that the Commission issue a Further Notice of Proposed Rule Making to allocate the 6425-6525 MHz band for general common carrier use.[26] WTCI argues that this band is lightly used and vacant in many areas and that there is no reason to continue reserving this 100 MHz of spectrum for LTTS. ANS supports WTCI's request to allocate additional spectrum for microwave use.[27] PB/NB opposes the request, arguing that the LTTS band provides a useful service that will be destroyed if the current restrictions on the band's use are removed.[28] PB/NB argue that the band is used extensively and that sharing is not possible because the nature of the LTTS service requires that links be established in a matter of hours. According to PB/NB, this short notice requirement does not allow for the extensive prior coordination

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[24] ANS at 6.

[25] 47 C.F.R. §§ 21.701(d), § 94.65(g).

[26] WTCI petition, supra note 6 at 5.

[27] ANS at 5.

[28] PB/NB at 3.

which would be required if other fixed microwave operations were allowed in the band. Further, PB/NB claim that, if the band is authorized for general fixed microwave use, it will become saturated and will preclude LTTS use.

26. We believe that the LTTS provides a useful service and that sharing this band with fixed microwave operations would significantly restrict the usefulness of this band for LTTS operations. Further, we believe that the five bands we have provided in this proceeding will accommodate both incumbent fixed microwave operations that must be relocated from the 2 GHz bands and future fixed microwave growth. Consequently, we will not initiate a Further Notice of Proposed Rule Making proposing to reallocate this band for general common carrier and private fixed microwave use at this time.

27. Other Technical Issues. Our purpose is to facilitate the relocation of incumbent fixed microwave operations that must relocate from the 2 GHz fixed microwave bands, not to address the technical standards governing fixed microwave operations generally. However, in reallocating the five bands to the private operational and common carrier fixed microwave services on a co-primary basis it was necessary to adopt technical rules to govern their use. Therefore, where necessary the Commission proposed and adopted standards for maximum authorized power, antenna standards, and automatic transmit power control (ATPC). The Commission stated in the Second R&O that it currently is reviewing the technical rules in Parts 21 and 94 and in the near future anticipates issuing a proposal to update and consolidate these rules.

28. In its petition, Comsearch requests the Commission to reconsider the maximum power authorized in the 4 GHz, 10 GHz, and 11 GHz bands and the antenna standards for the 6 GHz band.[29] WTCI requests that we reconsider the ATPC rules and allow for up to a 10 decibel (dB) increase in power, instead of the 3 dB adopted.[30] Both petitions are supported by ANS.[31]

29. In this proceeding we have made minimal changes to existing technical standards, all of which we believe are necessary to allow for the immediate implementation of fixed microwave service in the subject bands. We agree with the petitioners that the technical rules governing fixed microwave operations in these bands should be reviewed and updated to reflect advances in technology as well as recent changes in our

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[29] Comsearch petition, supra note 6 at 2.

[30] WTCI petition, supra note 6 at 8.

[31] ANS at 6.

regulatory structure. However, we believe these issues are best addressed in a proceeding dedicated to that purpose rather than being addressed in piecemeal fashion in this and other proceedings. Therefore, we are deferring consideration of technical issues regarding maximum authorized power, antenna standards, and ATPC to a future proceeding, to be initiated shortly.

Third Report and Order Issues

30. Public Safety Exemption. In the First R&O, the Commission exempted licensees of incumbent public safety facilities from involuntary relocation. In the Third R&O, we clarified the definition of public safety. The Commission's purpose in each decision was to ensure that essential safety of life and property communications services are not disrupted or otherwise disadvantaged.

31. In response to the First R&O, Apple Computer (Apple) and Rolm stated that allowing public safety facilities to remain in the band allocated to the provision of unlicensed devices would severely handicap, if not prohibit, implementation of unlicensed devices in these bands.[32] They argued that all incumbent facilities, including public safety, should be subject to relocation.

32. In response to the petitions for reconsideration of the Third R&O, American Personal Communications (APC) notes that public safety microwave paths comprise a large percentage of incumbents in major markets.[33] Similarly, Cox notes that in the Los Angeles MTA 25 percent of the incumbent microwave facilities appear to be licensed to governmental entities including public safety entities.[34] Cox argues that a 20 or 30 MHz allocation to each PCS licensee may prove inadequate for the introduction of PCS because of the public safety exemption. Cox claims that licensees may be unable to deploy PCS if they do not succeed in relocating a significant number of microwave incumbents. Both APC and Cox emphasize that relocation is not punitive or unfair. They note that incumbent licensees will not have to relocate unless requested to do so by an emerging technology licensee that will pay all costs of relocation. These parties note that no relocation will be required unless communications equal to or

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[32] Apple, Comments to the Third Notice of Proposed Rule Making at 5-7; Rolm Comments to the Third Notice of Proposed Rule Making at 2-3.

[33] APC at 12-13.

[34] Cox at 6-9.

better are provided the current licensee at no cost and with no disruption to communications.

33. Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) also expresses concern that voluntary relocations by exempt licensees likely will require payment above actual relocation costs. UTAM states that unlicensed PCS equipment manufacturers are particularly vulnerable to excessive demands because complete clearing of the band is required before nomadic devices can be deployed. UTAM concludes that delays in reaching voluntary relocation agreements with exempt microwave licensees will result in delays in unlicensed PCS deployment.[35]

34. On our own motion, upon reconsideration, we conclude that it would be in the public interest to subject all incumbent facilities, including public safety, to mandatory relocation if an emerging technology provider requires the spectrum. Of particular concern is providing adequate spectrum for operation of licensed services in major urban areas where there are a large number of incumbent public safety fixed microwave facilities and for operation of unlicensed PCS devices. It has been recognized by incumbent fixed microwave and PCS interests alike that it will not be possible for PCS and fixed microwave to operate in the same geographic area on the same frequency without interfering with each other. Upon review, and after considering these additional comments, we are now convinced that PCS service may be precluded or severely limited in some areas unless public safety licensees relocate. In this regard, in previous decisions, we believe that we underestimated the difficulty that PCS will have in sharing spectrum with the incumbent public safety licensees. Allowing all public safety facilities to remain in the band indefinitely would defeat our primary goal in this proceeding of providing usable spectrum for the implementation of emerging technologies.

35. We believe that certain public safety entities warrant special consideration because previously they have been excluded from involuntary relocation and because of the sensitive nature of their communications. Therefore, we are adopting for the public safety entities previously exempt, a relocation plan consisting of a four year voluntary negotiation period followed by a one-year mandatory negotiation period.[36] This policy,

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[35] UTAM at 11-12.

[36] The five year relocation plan applies to all public safety facilities as defined both in spectrum allocated for licensed services and allocated for unlicensed devices. The voluntary period will start with the Commission's acceptance of applications from emerging technology providers and the mandatory

summarized below, will not disadvantage incumbent public safety operations required to relocate.[37]

- All relocation costs will be paid entirely by the emerging technology licensee. These costs include all engineering, equipment, and site costs and FCC fees, as well as any reasonable additional costs.
- Relocation facilities must be fully comparable to those being replaced.
- All activities necessary for placing the new facilities into operation must be completed before relocation, including engineering and frequency coordination.
- The new communications system must be fully built and tested before the relocation itself commences.
- Should the new facilities in practice prove not to be equivalent in every respect, within one year the public safety operation may relocate back to its original facilities and stay there until complete equivalency (or better) is attained.

36. Public Safety Definition. In the Third R&O, we clarified the definition of public safety licensees operating 2 GHz facilities that would receive special treatment in the relocation process. The facilities within this exception were defined as those Part 94 facilities licensed on a primary basis under Section 90.19 Police Radio Service; Section 90.21 Fire Radio Service; Section 90.27 Emergency Medical Radio Service; and Subpart C of Part 90, Special Emergency Radio Services; and on which a majority of communications are used for police, fire, or emergency medical services operations involving safety of life and property. Additionally, licensees of other Part 94 facilities licensed on a primary basis under the eligibility requirements of Part 90, Subparts B and C, may request similar special treatment upon demonstrating that the majority of the communications carried on those facilities are used for operations involving safety of life and property. Our purpose in providing special treatment in the relocation process to some licensees was to ensure that essential safety of life and property communications services are not disrupted.

37. In their respective petitions, American Association of State Highway and Transportation Officials Special Committee on Communications (AASHTO), Public Safety Communications Council (PSCC), Public Safety Microwave Committee (PSMC), and Forestry-

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period will start at the request of the emerging technology provider.

[37] The obligations of the emerging technology provider when relocation is involuntary are set out in the First R&O, supra Note 1 at 12.

Conservation Communications Association (FCCA) contend that the Commission adopted an overly narrow definition of "public safety." The petitioners argue that the Commission should reconsider its decision to exclude facilities licensed to local governments if the majority of their communications are not used for police, fire, or emergency medical operations involving safety of life and property.[38] The petitioners claim that all operations currently listed under Part 90, Subpart B, including highway maintenance operations, forestry-conservation and other local government operations, support operations that deal with safety of life and property. The petitioners claim that the Commission has created an artificial distinction among public safety systems by assigning different levels of importance to such systems and that all applicants eligible under Part 90, Subpart B, should be treated the same because the vast majority of licensees in both groups are state or local governments responsible for providing safety of life and property services.

38. In comments to the petitions, the Association of Public-Safety Communications Officials-International (APCO) and Utilities Telecommunications Council (UTC) support broadening the definition.[39] On the other hand, a number of proponents of Personal Communications Services (PCS) oppose changing the definition of public safety. They state that changing the definition to include more facilities will increase relocation costs and delay implementation of PCS.[40] These parties argue that the rules already ensure that existing systems are fully protected by our requirement that incumbent licensees will have all relocation costs paid by the PCS licensees.[41] Apple and UTAM also express concerns with implementation of unlicensed PCS operations. They argue that because the sale of many unlicensed devices must be delayed until the unlicensed band is cleared of existing operations, expanding the definition of public safety entities will delay the introduction of unlicensed devices.[42]

39. In reply comments, PSMC states that those opposing its petition have overstated the impact of broadening the definition

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[38] See Petitions of AASHTO at 2, PSCC at 2, PSMC at 1, and FCCA at 2, note 7 supra.

[39] APCO at 1 and UTC at 11.

[40] American Personal Communications (APC) at 11 and Cox Enterprises, Inc. (Cox) at 2.

[41] Telocator at 5.

[42] Apple at 1 and UTAM at 10.

to include all state and local government licensees.[43] It claims that most local government communications systems are used for protection of life and property, and that the Commission's narrow definition of public safety will generate unnecessary disputes and have a negative impact on 2 GHz government microwave facilities, which represent only a small minority of all such facilities.

40. As discussed in the Third R&O, facilities licensed to entities eligible under Part 90, Subpart B, provide communications for a variety of different services. We concluded that the facilities to be afforded special treatment should be narrowly defined and limited to only those facilities on which a majority of communications are used for police, fire, or emergency medical services operations involving safety of life and property. We found that public safety and special emergency radio service operations that do not meet this criterion do not warrant special treatment.

41. We continue to believe that special treatment in the relocation process should be reserved for only those facilities as we have defined them. Special treatment in the relocation process for facilities that provide only limited communications for safety of life and property would negatively impact implementation of services employing new technologies. Again we note that all incumbent licensees required to relocate have adequate safeguards to protect their operations. The requirements for relocation ensure that relocated entities will be provided with comparable facilities permitting equivalent communications services at no cost to the existing licensees and that such facilities will be provided without any disruption of service. We are according special treatment, in the form of an extended voluntary relocation period, only to those licensees within the definition adopted in the Third R&O, which we hereby affirm. Accordingly, we will maintain our definition of public safety facilities subject to the extended relocation period addressed above.[44]

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[43] PSMC Reply at 2.

[44] We are aware that some fixed microwave operators unreasonably may refuse to enter into relocation agreements and instead delay provision of emerging technology services by requiring Commission consideration of their specific circumstances. We note that the Commission has a number of means at its disposal to discourage such actions when a request for mandatory relocation is before it. For example, in an egregious case of non-cooperation we could consider requiring the emerging technology provider to pay less than the full cost of relocation, or even none of the cost. Inasmuch as when a case is referred to us for decision the total agreement would be subject to our

42. Tax Certificates. In the Third R&O, the Commission authorized the grant of tax certificates for any sale or exchange of property made in connection with voluntary agreements to relocate fixed microwave facilities during the designated two-year period for voluntary negotiations between incumbents and emerging technology providers.

43. Apple, Association of American Railroads (AAR), UTAM, and UTC all request that the Commission expand its tax certificate policy so that it applies equally to both licensed and unlicensed PCS.[45] UTAM states that the one-year mandatory negotiation period for incumbents in spectrum allocated for unlicensed PCS operations appears to exclude incumbent licensees from eligibility for tax certificates.[46] It argues that the incentive of tax certificates may serve as an inducement for early relocation in the bands that need to be cleared as expeditiously as possible to allow for the implementation of unlicensed PCS devices.

44. In addition, UTC states that the adopted policy is unfair to incumbent licensees that are located in bands or areas of the country where emerging technologies do not develop during the initial two-year negotiation period.[47] Therefore, it argues that tax certificates should be awarded for any voluntary agreements entered into during both the initial two-year period and the one-year mandatory negotiation period. AAR argues that all incumbent licensees forced to relocate, no matter when or regardless of from which band, should be eligible to receive tax certificates.

45. There is broad support in the comments for authorizing the grant of tax certificates to incumbents that enter into voluntary agreements during the mandatory one-year negotiation period that are licensed in spectrum allocated for unlicensed devices or in geographic areas where emerging technologies do not

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decision, we believe parties have a clear incentive to voluntarily reach reasonable agreements.

[45] AAR also requests clarification on how the tax certificates will operate if the incumbent licensee uses only a portion of the payment to relocate its facilities. The Commission will grant tax certificates to facilitate implementation of its policy. The tax certificates will be for the full value of the compensation received. However, we note that the tax certificates will be subject to all applicable regulations of the Internal Revenue Service.

[46] UTAM petition at 3, note 7 supra.

[47] UTC petition at 6, note 7 supra.

develop in the initial two-year period in spectrum allocated for licensed services.[48] Only APC opposes any change from the current policy. Specifically, APC argues that our rules already provides incumbents full compensation for relocation and that the tax certificates should not be made a part of this compensation, but instead should be used as a reward for incumbents that reach agreement during the voluntary negotiation period.[49] APC claims that, if tax certificates are granted beyond the voluntary negotiation period, there will be no added incentive to reach agreement in a timely manner and expedite the deployment of PCS.

46. In the Third R&O, we authorized the grant of tax certificates to further our policy of encouraging voluntary agreements to relocate fixed microwave facilities during the initial two-year period. However, we agree with the commenters that tax certificates should be used to facilitate incumbent relocation from the unlicensed band and in geographic areas that are not developed by emerging technologies within the two-year voluntary negotiation period. Accordingly, we are modifying our policy to authorize the grant of tax certificates to incumbent fixed microwave operators that negotiate voluntary agreements during either the voluntary or mandatory negotiation period. We will not grant tax certificates to incumbents forced to relocate or that reach agreements after the mandatory negotiation period. We agree with APC that tax certificates should be used as an incentive to encourage the early relocation of fixed microwave facilities. This policy as modified will facilitate voluntary agreements, which in turn will facilitate the implementation of both licensed and unlicensed PCS.

47. In-band Retuning. In the Third R&O, the Commission adopted a policy of generally not permitting incumbent microwave operations to relocate within the 2 GHz band. While such relocation could be accomplished in many cases by making modifications to the incumbents' existing equipment, such as retuning it to another nearby frequency, we concluded that allowing relocation within the band for other fixed microwave facilities would not be in the public interest because in most cases the incumbent licensee eventually would be required to move to another band. Any such intervening relocation would increase the overall cost of relocating the incumbent fixed microwave facilities; increase the cost to licensed emerging technology providers by increasing the number of fixed microwave facilities that they may have to pay to relocate; and burden incumbents with two relocations instead of one. However, recognizing the need of public safety licensees not to disrupt essential safety of life

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[48] American Telephone and Telegraph Company (AT&T) at 8 and MCI Telecommunications Corporation (MCI) at 5.

[49] APC at 18.

and property communication services, we authorized relocation within the 2 GHz band for incumbent public safety facilities upon an adequate showing that such a relocation will not adversely affect the operations of the public safety incumbent, or any other fixed microwave incumbent or emerging technology/PCS licensee.

48. Apple requests that the Commission reconsider its decision not to permit general in-band retuning of incumbent facilities or, at a minimum, to permit such retuning among parties who so desire it.[50] Apple states that providing the option of retuning is vital to the prompt development of unlicensed PCS devices because unlicensed data-PCS cannot share spectrum with fixed microwave operations without causing interference to incumbent facilities. Thus, it claims that the entire unlicensed band will have to be cleared before unlicensed data-PCS devices may be implemented. Unless the Commission allows retuning, Apple argues the cost of clearing the band could preclude the development of data-PCS and other nomadic technologies. It claims that the cost of retuning is small in comparison to the cost of relocating to another band and that retuning would not burden the incumbents because they would have essentially the same facilities with comparable reliability. Further, it argues that the party that pays initially for the incumbent facilities to be retuned should be responsible for any future required relocations to other bands. Apple also requests that if the Commission does not allow for retuning of incumbent facilities without restriction, it should at least permit retuning in appropriate circumstances by parties who desire it and not restrict the option of retuning to public safety incumbents.

49. Further, Apple requests that when consent is required to retune a public safety facility from the unlicensed band that such consent should not be allowed to be withheld unreasonably. It argues that only one holdout could delay or destroy the introduction of nomadic unlicensed devices. Finally, Apple requests the Commission to designate a specific date one year after the close of the mandatory negotiation period by which all microwave incumbents will be relocated from the unlicensed band and also to adopt a dispute resolution process that will resolve all disputes within six months of the close of the mandatory negotiation period. It argues that the current relocation

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[50] Apple petition at 3, note 7 supra. Apple filed a separate "Emergency Petition," in GEN Docket 90-314, that addresses related issues such as the amount of spectrum to be allocated to unlicensed PCS, how that spectrum should be divided among unlicensed PCS devices, and implementation of unlicensed PCS. These issues will be addressed in GEN Docket 90-314.

process is open-ended and that it may take years to resolve any appeals of involuntary relocations.

50. Apple's retuning proposal is strongly opposed by several commenters.[51] American Telephone and Telegraph Company (AT&T) and UTC argue that Apple does not provide any new facts or arguments that would justify reconsideration. Rather, according to these parties, Apple merely raises claims that have already been considered and rejected by the Commission.[52] MCI states that Apple has not demonstrated the feasibility of its plan to "repack" the 1850-1990 MHz band.[53] Specifically, it states that no demonstration has been made that any significant portion of the existing 2 GHz radios is capable of being retuned. Cox argues that Apple's approach is impractical and fails to take account of the chain reaction that retuning would have on microwave licensees that might otherwise be undisturbed.[54]

51. APC, Cox and MCI state that even if retuning were demonstrated to be feasible, it would further encumber the licensed PCS band, cause delay, increase the cost of implementing licensed PCS services, and expose incumbent microwave licensees to a two-step relocation process. They claim that it would be inefficient to move microwave incumbents to other portions of the 2 GHz frequency band when they must ultimately relocate elsewhere. Cox also argues that even if the entity that pays for retuning the incumbent's facility remains responsible for any subsequent out-of-band moves, the intermediate step would still increase the overall transition cost and delay the implementation of PCS.

52. UTAM supports Apple's request for consensual retuning in appropriate circumstances.[55] Specifically, it contends that when all interested parties reach a satisfactory, voluntary agreement to retune microwave facilities as either an interim or permanent measure, the public interest would be served by allowing that agreement to be effectuated. API supports retuning only in cases in which permanent 2 GHz government spectrum is available.[56]

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[51] APC at 2, American Petroleum Institute (API) at 7, AT&T at 1, Cox at 8, MCI at 2, and UTC at 12.

[52] AT&T at 3 and UTC at 12.

[53] MCI at 2.

[54] Cox at 8.

[55] UTAM at 13.

[56] API at 7.

53. APC states that Apple's request that the Commission adopt a "reasonableness" standard for granting retuning consent by the incumbent or the affected PCS licensee is unworkable.[57] It argues that Apple offers no solutions as to what constitutes reasonableness, how a reasonableness showing could be made, or how to resolve disputes concerning these matters. In reply comments, Apple argues that the Commission, or an arbitrator or mediator, could assess the rejection of the retuning proposal in light of the basic principles governing relocation, such as technical comparability, cost, and interference posed by the relocation.[58]

54. In response to Apple's request that the Commission set a specific date by which incumbents in the unlicensed bands would be required to be retuned or relocated and adopt a dispute resolution process, UTC states that the Commission has established a mechanism to promote use of marketplace forces in the transition of these bands to emerging technologies and has set strict timetables for both voluntary and mandatory negotiations. Therefore, UTC urges, the procedures requested by Apple are unnecessary.[59] Further, it argues that Apple's suggestion that all microwave incumbents be required to be relocated one year after the mandatory negotiation period is unreasonable because it would be virtually impossible to complete negotiations with all the licensees in the spectrum designated for unlicensed operations in one year.

55. The Commission's primary goals in this proceeding are to provide usable spectrum for emerging technologies in a timely manner and to provide for reaccommodation of incumbent operations when necessary with a minimum of disruption to those operations. We believe that it is possible for some degree of sharing to exist between emerging technologies and fixed microwave operations in these bands, particularly as emerging technologies are developing. However, we believe that in the long term these bands will be required primarily for emerging technologies, particularly in urban areas. Therefore, it is inconsistent with our goals, as a general policy, to encourage new or relocated fixed microwave use of these bands. Specifically, we believe that retuning in general will be detrimental to our goals, because most retuned fixed microwave facilities ultimately would be required to move to another band. In these cases, retuning would increase the overall cost of relocating the incumbent fixed microwave facilities; it would increase the number of fixed microwave facilities that other emerging technology providers

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[57] APC at 9.

[58] Apple reply at 5.

[59] UTC at 6-8.

would have to relocate, which would delay implementation of service in the band to which the incumbent facility was temporarily moved to; and it would burden incumbents with two relocations instead of one. Further, in cases where the current equipment is incapable of being retuned, it would be necessary to purchase new equipment, which would result in little saving of time or money in the relocation process. Therefore we will not mandate relocation within the 2 GHz band.

56. We believe, however, that some retuning may be possible, particularly in rural areas where all of the spectrum allocated for emerging technologies may not be needed. We believe that allowing such retuning would facilitate the clearing of spectrum in these cases and that such clearing may lead to quicker implementation of PCS services in these bands. Therefore, we will allow relocation within the 2 GHz band where all interested parties agree to the retuning of the incumbent's facilities. "All interested parties" includes the incumbent licensee, the emerging technology provider or representative requesting and paying for the relocation, and any emerging technology licensee of the spectrum to which the incumbent's facilities are to be retuned.

57. We are concerned, however, about requiring the entity that requests and pays for the retuning to remain responsible for any subsequent relocation to other spectrum as suggested by Apple. Specifically, we are concerned that adopting such a policy may be difficult or impossible to enforce, particularly if the entity requesting and paying for the original relocation goes out of business before any subsequent moves are required. Further, we are concerned that such a policy may create an incentive to the emerging technology provider assigned the spectrum to which the incumbent's facilities were moved to relocate unnecessarily the incumbent's facilities a second time because the cost would be born by the original entity requesting the move. We believe that a better policy would be for the affected parties themselves to agree upon responsibility for any future moves in the relocation agreements. For example, either the emerging technology provider that requested the original relocation, the emerging technology licensee on the spectrum to which the fixed microwave facilities will be relocated, or the fixed microwave licensee could pay for any future relocations. This approach would leave to the parties to the retuning the responsibility to determine the allocation of costs for any future move by the incumbent, should the need arise. Further, we are prohibiting any retuning to emerging technology spectrum that is not yet allocated to a specific new service, specifically, the 1970-1990, 2110-2130, and 2150-2170 MHz bands.

58. We will not adopt a specific date for the relocation of all incumbent facilities from the unlicensed band as requested by Apple. We believe that the relocation framework adopted in this

proceeding is sufficient to allow for a timely relocation of the incumbent facilities from the unlicensed bands. However, if it becomes apparent that additional measures are required by the Commission to facilitate the implementation of unlicensed PCS we will reconsider this decision at that time.

59. Initiation of the two-year voluntary negotiation period. In the Third R&O, we stated that the fixed two-year period for voluntary negotiations will commence with our acceptance of applications for emerging technology services and the one-year mandatory negotiation period for unlicensed spectrum will commence when an unlicensed equipment supplier or representative initiates a written request for negotiation with a specific licensee.

60. AAR and UTC request clarification as to when the two-year negotiation period commences for the various spectrum blocks and markets to be served by emerging technologies.[60] UTC notes that 60 MHz of spectrum, the 1970-1990, 2110-2130, and 2160-2180 MHz bands, were not designated for PCS. UTC argues that commencement of a voluntary negotiation period for this spectrum should not be tied to acceptance of applications for PCS and requests clarification that the triggering event for the two-year voluntary negotiation period is the acceptance of the formal requests for frequency assignment and licensing that occurs after the selection of tentative licensees. UTC claims this clarification is necessary to spare incumbent licensees the inconvenience of engaging in futile negotiations with unsuccessful emerging technology license applicants.

61. API and MCI generally support AAR and UTC's request.[61] API claims the current rules could eliminate opportunity for voluntary negotiations and argues that the voluntary negotiation period should commence on the date of acceptance of requests for frequency assignment and licensing in each specific market following the selection of tentative licensees. MCI proposes that the starting date for the voluntary negotiation period be the date a public notice is issued by the Commission announcing "tentative selectees" for a given PCS service area and frequency block. APC and Cox oppose the requests, stating that the starting time for the two-year negotiation period should remain the same as when competitive bidding applications are accepted.[62] They argue that waiting until licenses have been awarded will delay the clearing of the allocated bands. APC argues that the competitive bidding process will ensure that only qualified and

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[60] AAR petition at 5 and UTC petition at 3, note 7 supra.

[61] API at 4, MCI at 5, and AAR Reply at 2.

[62] APC at 14 and Cox at 11.

serious parties apply for PCS licenses and that PCS applicants will have the incentive to negotiate meaningful and serious agreements.

62. Apple takes no position on initiating the two-year voluntary period but requests the Commission to clarify that if providers of unlicensed PCS products need to relocate facilities from the bands allotted for licensed service due to potential adjacent channel interference, the one-year mandatory negotiation period applicable to unlicensed service, rather than the two-plus-one year period applicable to licensed services, should govern the relocation.[63]

63. The transition framework adopted in this proceeding attempts to balance the need to provide usable spectrum for emerging technologies as quickly as possible against causing disruption to the incumbent operations. We believe the two-tier negotiation process provides incumbents with adequate protection in the relocation process, even in rural areas where spectrum may not be required immediately for emerging technologies. Therefore, we continue to believe that in order to facilitate the implementation of PCS in a timely manner, the two-year voluntary negotiation period should begin in all areas upon the receipt of applications for the emerging technology service. However, to avoid ambiguity as to the exact date on which the voluntary negotiation period will begin, we will issue a public notice specifying this date. We also note that this period is for voluntary negotiations, and therefore that incumbents are not required to negotiate until licensees have been designated if they so choose.

64. With regard to Apple's request to clarify which negotiation period is applicable when it is necessary for a PCS licensee or representative of the unlicensed devices to negotiate with a fixed microwave licensee whose operations are in spectrum adjacent to that of the PCS provider, we conclude that the transition schedule of the entity requesting the move will apply.[64] For example, if a representative for unlicensed devices needs to relocate a fixed facility that is operating in spectrum allocated for licensed PCS, the transition schedule for spectrum allocated for unlicensed devices (one-year involuntary) will apply.

65. Relocation to the 1710-1850 MHz Government band. In the Third R&O, we stated that our staff is working with the National Telecommunications and Information Administration (NTIA)

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[63] Apple at 5.

[64] See Second Report and Order in GEN Docket No. 90-314, note 108, 8 FCC Rcd 7700 (1993).

to establish procedures to accommodate in the adjacent government fixed band at 1710-1850 MHz those non-government 2 GHz fixed microwave facilities that technically cannot be accommodated in higher bands. We noted that NTIA has agreed to provide limited, conditional access to government spectrum on a case-by-case basis.

66. AAR states that relocating incumbent facilities to the 1710-1850 MHz government band is in the best interest of both incumbents and PCS providers.[65] Therefore, it requests the Commission to urge NTIA to make 50 MHz of spectrum available for relocation of incumbent facilities as part of the 200 MHz of government spectrum which NTIA is required to make available for non-government use by the Omnibus Budget Reconciliation Act of 1993.[66] AAR's proposal is supported by Apple, MCI, and PSMC.[67]

67. The Commission's staff is continuing to work with NTIA to make government spectrum available for relocation of existing 2 GHz operations. Further, we believe NTIA will make a good faith effort to accommodate as many as possible of the links recommended for relocation by the Commission. We will request that special consideration be given to reaccommodating links that are technically difficult to accommodate elsewhere, including those that operate in bands allocated for unlicensed services, those of public safety services, and those that require long paths.

68. Implementation of the Relocation Rules in the 1970-1990 and 2160-2180 MHz Bands. AMSC Subsidiary Corporation (AMSC) requests that the relocation rules adopted in this proceeding not

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[65] In response to the Second R&O, WTCI argues in its petition for reconsideration that use of the 1710-1850 MHz band to reaccommodate incumbents should be encouraged, as the cost to modify existing 2 GHz facilities to this band would be minimal and could be accomplished expeditiously.

[66] Pursuant to the Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66 enacted on August 10, 1993, the Secretary of Commerce must identity and transfer to the Commission not less than 200 megahertz of government spectrum for non-government use. All of the spectrum to be transferred must be below 5 GHz, and one-half must be below 3 GHz; not less than 50 megahertz of the 200 megahertz must be recommended for immediate reallocation within six months of enactment, 25 megahertz of which must be below 3 GHz. NTIA made its initial spectrum recommendation on February 10, 1994, see U.S. Department of Commerce, Preliminary Spectrum Reallocation Report (NTIA Special Publication 94-27, February 1994)

[67] Apple at 3, MCI at 2, and PSMC reply at 3.